

WHAT IS CLAIMED IS:

1. A multi-program processing system in which a plurality of programs can operate simultaneously, comprising:

exclusion control means for applying exclusion control to
5 a file to be an object of reference to and update of said plurality of programs by a unit of a block; and

retaining means for temporarily retaining the block before update corresponding to the block being updated by the programs,

wherein while either a deadlock or an abnormal termination
10 occurs in a certain program and updates up to then are rolled back, reference and update to a block to be an object of said rollback from another program are allowed by using said block temporarily retained in said retaining means.

2. The multi-program processing system according to claim 1,
15 further comprising:

a block state table for retaining program identification information for specifying a program that is utilizing said block for each block of said file and information indicating whether or not said block is being rolled back,

20 wherein said exclusion control means performs said exclusion control according to recorded contents of said block state table.

3. The multi-program processing apparatus according to claim 1, further comprising:

rollback means for writing a block before update temporarily retained in said retaining means back to a file corresponding to said block to cancel update when either said deadlock or said abnormal termination occurs in a reference and update request
5 from said program.

4. The multi-program processing apparatus according to claim 1,

wherein said rollback means makes rollback to a block unnecessary if said block is updated by another program, and
10 performs rollback to said block if said block is not updated by said another program.

5. A rollback method of a file in a multi-program processing system in which a plurality of programs can operate simultaneously,

15 wherein, while exclusion control is applied to a file to be an object of reference and update of said plurality of programs by the unit of a block and either a deadlock or an abnormal termination occurs in a certain program and updates up to then are rolled back, reference and update to a block to be an object
20 of said rollback from another program are allowed using a block temporarily retained in retaining means for temporarily retaining a block before update corresponding to a block being updated by said program.

6. The rollback method of a file according to claim 5,

wherein said exclusion control is performed according to recorded contents in a block state table for retaining program identification information for specifying a program that is utilizing said block for each block of said file and information
5 indicating whether or not said block is being rolled back.

7. The rollback method of a file according to claim 5,
wherein a block before update temporarily retained in said retaining means is written back to a file corresponding to said block to cancel update when either said deadlock or said abnormal
10 termination occurs in a reference and update request from said program.

8. The rollback method of a file according to claim 5,
wherein rollback to a block is made unnecessary if said block is updated by another program, and rollback to said block
15 is performed if said block is not updated by said another program.

9. The multi-program processing system according to claim 1,
wherein if a target block is available and a request from said program is reference, said target block is read from a data file in which said file to be an object of reference and update
20 is stored, and is returned to said program.

10. The multi-program processing system according to claim 1,
wherein if a target block is unavailable and a request from said program is reference, said target block is read from said retaining means instead of reading said target block from a data

file in which said file to be an object of reference and update is stored.

11. The multi-program processing system according to claim 1,
wherein if a request from said program is update, a block
5 before update is saved from a data file in which said file to
be an object of reference and update is stored, to said retaining
means and said data file is updated thereafter.

12. The rollback method of a file according to claim 5,
wherein if a target block is available and a request from
10 said program is reference, said target block is read from a data
file in which said file to be an object of reference and update
is stored, and is returned to said program.

13. The rollback method of a file according to claim 5,
wherein if a target block is unavailable and a request from
15 said program is reference, said target block is read from said
retaining means instead of reading said target block from a data
file in which said file to be an object of reference and update
is stored.

14. The rollback method of a file according to claim 5,
20 wherein if a request from said program is update, a block
before update is saved from a data file in which said file to
be an object of reference and update is stored, to said retaining
means and said data file is updated thereafter.